number of cigarettes that the spouse smoked. After various corrections for confounders, the overall relative risk for lung cancer from ETS in nonsmokers is estimated to be about 1.2, accounting for an estimated 3,000 lung cancer deaths annually in the United States in nonsmokers.

Several epidemiologic studies have found an association between ETS exposure and an increased risk of myocardial infarction in nonsmokers with spouses who smoke. On average, ETS exposure has been associated with a 30% increased risk of coronary heart disease, which has been estimated to cause as many as 37,000 premature deaths in the United States annually.

Several studies have reported substantial reductions in pulmonary function in adult nonsmokers with exposure to ETS at home, at work, or both. The clinical import of these findings is uncertain. Although research is conflicting, asthma in adults has been reported to be aggravated by ETS. When exposed to ETS, nonsmokers often complain of eye irritation, nasal congestion, headaches, and coughing. Although these symptoms are prevalent in nonsmokers with exposure to ETS, they are more severe in people who have a history of allergies.

An appreciation of the hazards of environmental tobacco smoke is important to practicing physicians for several reasons. It provides a basis for advising parents not to smoke when there are children in the home. It provides a basis for insisting that child-care facilities be smoke-free. It provides a basis for recommending smoking restrictions in work sites and other public places. These restrictions at home or at work sites often result in smokers quitting smoking.

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Chemical Inhalation Injury and Its Sequelae

FEW EVENTS CONCERN the public as extensively as a mass outbreak of a toxic chemical illness. The recent release of sulfuric acid into the environment in Richmond, California, sent more than 20,000 persons seeking acute medical care. Despite the relatively self-limited nature of most of the symptoms reported, this "hazardous material incident" overwhelmed the local health care system and is sure to result in a lengthy legal liability process. This was only the most dramatic in a series of releases that seem to cloud the environmental health horizon, such as the methyl isocyanate tragedy in Bhopal, India. The metam sodium contamination after a train derailment in Dunsmuir, California, reminded us that large-scale exposures to relatively exotic chemicals, about which little reliable toxicologic data are available, can occur close to home.

Irritant-inhalation injury is relatively common and can occur in a variety of circumstances. For example, poison control centers nationwide receive about 60,000 chemical inhalation case referrals annually, of which a third to a half are due to irritants. The most common single chemical cause of irritant illness appears to be chlorine. Chlorine exposure scenarios include transportation release, occupational exposure, the misuse of household cleaning products, and pool chemical mishaps. This variety of circumstances underscores the strong link between occupational and environmental medicine in preventing and treating chemical inhalation injuries.

In recent years, growing attention has been given to the possible long-term sequelae of irritant-inhalation injury. Typically an intense, high-level exposure causes clear-cut respiratory symptoms, such as cough, wheeze, or dyspnea, beginning immediately or shortly after the irritant is inhaled. The symptoms usually lead to medical evaluation immediately, frequently with an empiric prescription of an inhaled bronchodilator. In general, these exposures rarely result in even a brief hospital admission; most cases resolve over hours to days. Nonetheless, a subset of patients (it appears to be less than 10%) continues to complain of persistent respiratory symptoms and to show increased nonspecific airway responsiveness on challenge testing. This phenomenon has been given different names, including "reactive airways dysfunction syndrome" and, alternatively, "irritant-induced asthma." The latter term may be preferable for more general use because it includes cases where the irritant exposure is subacute or long-term, rather than being limited to short-term exposures alone.

Research is limited on the mediating factors that may predict who will go on to have persistent symptoms and increased airway responsiveness after irritant exposure. Cigarette smoking may play a role. Our understanding of ongoing symptoms is further complicated by the psychic distress that often follows mass inhalation exposures, with some patients meeting the diagnostic criteria of posttraumatic stress syndrome.

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Rehabilitation of Occupational Low-Back Pain—Avoiding Unnecessary Disability

LOW-BACK PAIN is the most common cause of disability in workers younger than 45 years and the second most common cause in those 45 to 65 years old. It is also the most expensive occupational injury, with the 10% of pa-